

Applicant: William A. Calabro
U.S.S.N.: 09/844,491

REMARKS

In response to the Office Action dated September 30, 2003, Applicant respectfully requests reconsideration. The application is believed to be in allowable condition.

Applicant notes that claims 27-34 have been indicated as allowable.

Claims 17, 21, 22 and 24-26 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,345,061 (Chanasyk). As discussed below, independent claims 17 and 24 are patentable over the cited reference.

Chanasyk discloses a solder reflow oven for soldering surface mount devices to printed circuit boards using convection and infrared radiation. A reflow oven is designed to produce heat sufficient to melt solder paste on the circuit board, usually in a temperature zone exceeding 200 degrees Celsius. The apparatus includes a heat zone having an upper heater cell and a lower heater cell respective to the conveyor by which the printed circuit boards are transported, such that both the upper and lower surfaces of the circuit board are heated in the heat zone. Each heater cell includes a fan for moving air through perforations formed in heating plates in a direction toward and perpendicular to the circuit boards. The air is heated as it passed through the heating plates.

Claim 17 is directed to a system for heating a circuit board. The system includes a support for supporting the circuit board in a working position along a support plane and a heater mounted for heating one side of the circuit board. The system further includes a first hollow elongated tube mounted so that the heater is between the circuit board and the first tube, the first tube being disposed in a plane substantially parallel to the support plane and having a plurality of holes oriented so that when a gas is introduced into the first tube, the gas is directed through the holes, past the heater, and toward the circuit board.

Chanasyk does not teach or suggest a heating system as is recited in claim 17. In particular, Chanasyk does not discuss a first hollow elongated tube disposed in a plane substantially parallel to a support plane. Nor does Chanasyk discuss a tube having a plurality of holes such that when a gas is introduced into the first tube, the gas is directed through the holes, past the heater, and toward the circuit board, as is recited in claim 17. Chanasyk does not include heating tubes through which air flows; rather, Chanasyk uses fans positioned in a chamber to push air out of the chamber, through apertures in a heated plate. Thus, claim 17 is

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patentable over Chanasyk. Claims 21 and 22 depend directly from claim 17 and are patentable for at least the reasons that claim 17 is patentable.

Claim 24 is directed to a method of heating a circuit board. The method includes supporting the circuit board in a working position along a support plane, heating a side of the circuit board with a heater, and positioning a first hollow elongated tube so that the heater is between the circuit board and the first hollow elongated tube, the first hollow elongated tube being in a plane substantially parallel to the support plane. The first hollow elongated tube has a plurality of holes oriented to face the circuit board. The method further comprises introducing a gas into the first hollow elongated tube.

As discussed above with respect to claim 17, Chanasyk does not teach or suggest a first hollow elongated tube having a plurality of holes. Nor does Chanasyk teach or disclose positioning a first hollow elongated tube so that a heater is between the circuit board and the first hollow elongated tube, and wherein the first hollow elongated tube is in a plane substantially parallel to a support plane. For at least this reason, claim 24 is patentable over the cited art. Claims 25 and 25 depend directly or indirectly from claim 24 and are patentable for at least the reasons noted above.


Claim 23 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Chanasyk. Claim 23 directly depends from claim 17 and is therefore patentable for at least the reasons that claim 17 is patentable over the same reference.

Claims 18-20 are objected to as being dependent upon a rejected base claim. Claims 18-20 are directly or indirectly dependent upon claim 17 and are patentable for at least the reasons noted above with respect to claim 17.

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The application as presented is believed to be in allowable condition, and Applicant respectfully requests a favorable examination. To answer any questions, or otherwise further the prosecution of this application, the Examiner may contact the undersigned attorney at the number provided below.

Respectfully submitted,


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